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SONY DEVELOPS "HIGH DEFINITION VIDEO SYSTEM"  
TO MEET THE NEEDS OF THE COMING ERA  
OF HIGH-STANDARD VISUAL INFORMATION

TOKYO -- Sony Corporation announced today that it has developed a new, high-standard video recording and playback system called "Sony High Definition Video System" to expand the uses of video and television toward the new image requirements of the 21st century. Sony became the first company in the world to demonstrate a high-definition television system that incorporates video recording capabilities. This high-definition video system is a result of Sony's research and development work in future-oriented visual information technology.

The prototype HDVS being demonstrated today features 1,125 scanning lines and 60 fields per second with a frequency band width of about 30 MHz, which can contain five to six times more information than the present NTSC standard color TV system. The NTSC system used in Japan, the United States and some other countries uses 525 scanning lines and 60 fields per second with a maximum band width of 4.2 MHz.

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Based on the recording and processing of wide-band video signals, this is a total video system to meet the requirements of high-definition images, including a new video camera, videotape recorder, display unit and other video-related equipment.

With the standard TV system, which uses 525 scanning lines, it is impossible to obtain pictures of very high resolution approaching the quality of 35mm film. However, supported by the rapid advances in video technology in recent years, there has been a growing interest in high-definition pictures among the TV broadcasting, cinema and other image-handling industries of the world. This global interest in high-definition images has already stimulated the reassessment of the present broadcasting systems.

In the meantime, Japan Broadcasting Corporation (NHK) conducted research and development in this field for the first time in the world back in 1968. The NHK system, which also uses 1,125 lines, was demonstrated at the SMPTE conference in San Francisco in February of this year. NHK showed its high-definition TV system at an FCC gathering in Washington also. With remarkable features, the NHK system is attracting the keen interest of the world's broadcasting industry as an initial step toward the coming era of high-definition visual information.

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Based on NHK's HDTV technology, Sony has developed this high-definition video system by adding video recording, time base correction and other capabilities. Sony expects to play a significant role in promoting and enhancing the high-definition technology as proposed by NHK and providing a direction for the new image industry of the coming era.

Sony has demonstrated this HDVS prototype so as to substantiate its feasibility as a highly potential video system in the coming age of high-definition pictures. The new system is expected to improve the economical efficiency and expand the production techniques of motion-picture production drastically with its electronic shooting and editing capabilities. Of course, Sony's High Definition Video System ensures that the picture resolution is the same as the present 35mm film, which boasts about a million picture elements.

The 1,125-line Sony High Definition Video System mainly consists of the following equipment:

1. High-definition 3-tube TV camera, which incorporates a newly developed 1-inch Saticon<sup>R</sup>\* high-resolution pickup tube.
2. 1-inch wide-band RGB VTR, which employs a new high-density recording format.
3. Wide-band digital time base corrector, which features a new wide-band AD converter.

4. 20-inch and 32-inch high-definition Trinitron monitors with a fine-pitch Trinitron picture tube.

5. 100-inch high-definition TV projector with a wide-band picture tube for projection use.

The HDVS incorporates a three-channel component signal system, which processes three different color signals (red, green and blue) separately, from the input to the output of video signals. This new signal system accommodates a very wide band width of about 30 MHz for each of the three color channels.

\*Saticon<sup>R</sup> is a trade mark registered by NHK.

#### Main Specifications of the Sony High Definition Video System

Signal system:	RGB component 3-channel system
Horizontal scanning lines:	1,125 lines
Number of fields:	60 fields per second
Interlace:	1:2
Aspect ratio:	1:1.33 (Standard) or 1:1.85 (Vista) or 1:2.35 (CinemaScope)
Band width:	About 30 MHz per channel

## Numerous Possibilities of the Sony High Definition Video System

Sony's U-matic video system has been used in news gathering by TV stations over the past nine years, steadily replacing 16mm film, because of its economy, efficiency in program production and convenience in editing. Video is used not only in news events, which is called Electronic News Gathering (ENG), but also in production and editing of programs. Now, the Type-C one-inch VTR developed by Sony is widely used for producing, editing and broadcasting of TV programs.

However, the present standard TV system, which uses 525 lines and 60 fields per second, cannot provide a picture resolution as high as that of 35mm film because of its technical limitations. At present, therefore, 35mm films (occasionally 16mm films) are used for shooting and producing TV movies and motion pictures for theater projection. 35mm film provides about one million picture elements.

Sony's High Definition Video System, however, equals the 35mm film capabilities in definition and color fidelity, as it uses 1,125 lines (with 60 fields per second) and the RGB three-channel signal system. The HDVS, therefore, is expected to change the production and distribution methods of motion pictures dramatically in the future, challenging the dominance of 35mm film.

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Advantages of using video in movie making:

1. Economy and production efficiency

The use of video in motion-picture production will lead to drastic reductions in raw film consumption, film developing, editing and other related costs.

A story can be perfected progressively and efficiently, because video enables repetitive recording and playback of any segment of the story for on-the-spot preview and trail editing at the time of collative reading (of a dialogue script) or rehearsing. Thus, the HDVS will reduce production time greatly by simplifying the work involved, including automation.

Moreover, the new system can expand the range and scope of special effects, by producing special effects through electronic processing, with accompanying cost reduction.

As such, the use of video technology will reduce the total cost of motion-picture production. Called "Electronic Cinematography" and enthusiastically promoted by CBS Vice President Joseph Flaherty, Hollywood film directors Francis Coppola, George Lucas and other leaders, this kind of movie production is expected to change the conventional film-making techniques dramatically.

## 2. Picture quality

The Sony HDVS ensures as high picture resolution as 35mm film even on a VistaVision-size screen (aspect ratio 1:1.85), as it provides a very wide band width of about 30 MHz for each of the three color (red, green and blue) channels. Also, because of its high definition, the new system ensures a wide range of color reproduction and fidelity characteristics unique to video.

## 3. Distribution

Electronic cinematography is expected to change the conventional method of film distribution as well.

What is produced in video can be transferred onto 35mm film by an electron beam recorder or by means of laser recording, and then distributed in U-matic cassettes to so-called mini-theaters which are becoming popular in the United States and Europe, after converting it to an interim signal system (using, for example, 800 lines) between the HDVS and the NTSC standard system.

Uses of the HDVS can be further expanded through satellite broadcasting, cable TV or optic fiber transmission in the future.

In addition to the expansion of motion picture production techniques through video, the HDVS is expected to enhance the techniques of TV program production and broadcasting by the present NTSC system.

1. Such special effects as electronic zooming and trimming can be easily provided in the post-production process, without degrading the picture quality.

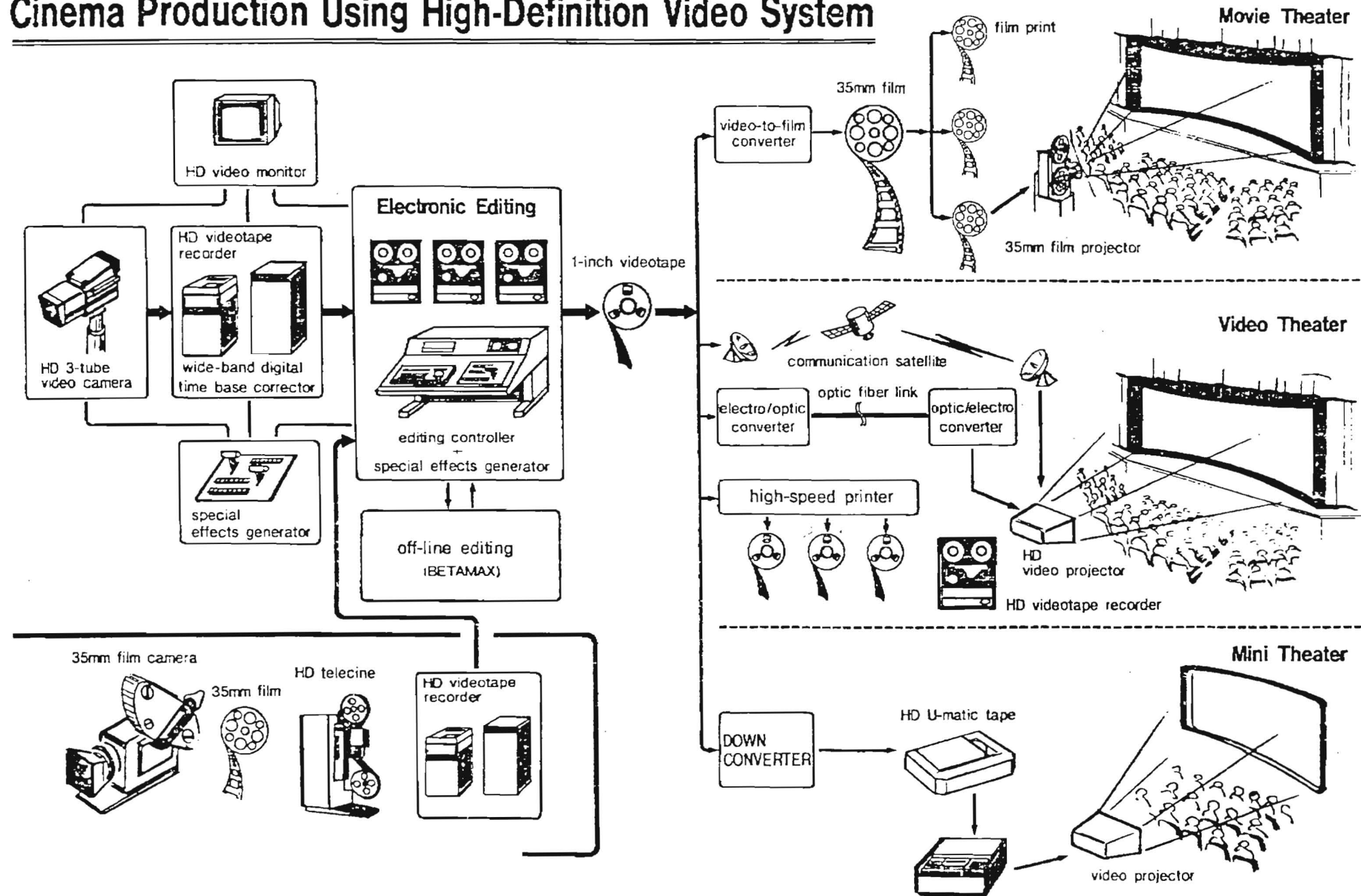
2. Image enhancing, noise reduction, conversion to PAL or SECAM, besides NTSC, and other operations can be done easily through digital image processing prior to broadcasting of programs which are produced by the HDVS.

The above are the key points of the prototype High Definition Video System Sony has developed. With this technological base, Sony will continue its research and development in the field for the coming era of high-standard visual information.

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# Cinema Production Using High-Definition Video System



# High-Definition TV Broadcasting System

